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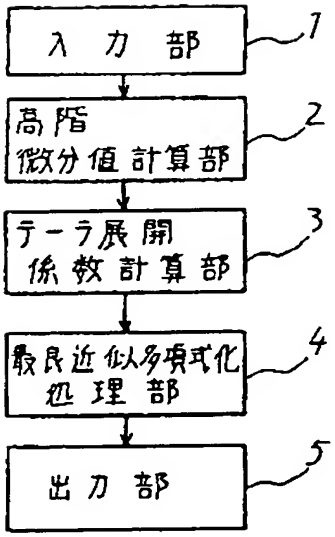
TITLE : CALCULATION SYSTEM FOR COEFFICIENTS OF POLYNOMIAL APPROXIMATING BESSEL FUNCTION



ABSTRACT : PURPOSE: To generate an approximate polynomial for obtaining a solution with high accuracy without requiring higher accuracy computation even for cases where the accuracy of the conventional approximation method is low by introducing a high-order derivative calculation part of Bessel functions by the recurrence formula calculation system.

CONSTITUTION: An input part 1 inputs truncation information for the best approximation such as information on the section of X where the best approximate expression is desired to be obtained and required accuracy or the maximum number of terms, and the high-order derivative calculation part 2 performs calculation using successively higher order derivatives and the recurrence formula calculation system starting with the 0-th order derivative of the 0-th-order Bessel function. The Taylor expansion coefficient calculation part 3 divides the derivatives of respective orders of the 0-th-order Bessel function by the factotial of the order to calculate the coefficients of the Taylor expansion. Then an optimum approximate polynomial processing part 4 successively calculates, using the coefficients of the Taylor expansion, optimum approximate polynomial coefficients from the 1st-order coefficient to the high-order coefficients until the truncation information such as the required accuracy and the maximum number of terms is satisfied, and an output part 5 outputs values of the calculated coefficients of the optimum approximate polynomial, maximum error, and deviation point, and the hike. Consequently, even if the computer has no margin for accuracy, an approxi mate expression for which permits to obtain an approximate solution at a high speed with high accuracy.